



10 March 1987
Vol. 2, No. 4

Science and Technology Perspectives

DEVELOPMENTS

Superconductive Ceramics

(Japan) Tokyo University announced in December that superconductivity had been achieved at 37°K using a ceramic oxide of lanthanum, strontium, and copper. The Agency of Science and Technology's Electrotechnical Laboratory announced in January that it had achieved superconductivity at 46°K using the same ceramic oxide. The process allows liquid hydrogen or liquid neon to be substituted for more expensive liquid helium as cooling agents. (Tokyo NIHON KEIZAI SHIMBUN Dec/Jan 86)* Junko A. X2726

..... Continued on Page 1

FEATURE ARTICLES

WEST EUROPE: Protein Engineering Page 4

Several West European governments have launched major protein engineering programs to develop marketable bioengineered products within five years.

USSR: New Organophosphorus Pesticides Page 6

Soviet chemists have synthesized several new organophosphorus compounds as part of an effort to produce pesticides with increased toxicity.

CUBA: Biotechnology Research Page 8

Cuban scientists have perfected several cloning techniques and reportedly are involved in what is described as "high-risk" genetic manipulation.

REPORTS

USSR: Antarctic Ice Measurements Page 9

USSR: Articles on Ocean Remote Sensing Page 10

DATA BASE SURVEYS Page 12

PREVIEWS Page 14

PERSPECTIVES selections are based solely on foreign press, books and journals, or radio and television broadcasts. Some of the materials used in this publication will appear as abstracts or translations in FBIS serial reports. Comments and queries regarding this publication may be directed to the Managing Editor (Craig M.) or to individuals at the numbers listed with items.

STAT

FOR OFFICIAL USE ONLY**DEVELOPMENTS**

DEVELOPMENTS highlights worldwide S&T events reported in the foreign media. Items followed by an asterisk will be published by FBIS. The contributor's name and telephone number are provided.

Airbus A-340

(FRG) In a 15 January communique, Lufthansa announced that it has ordered 15 Airbus A-340 aircraft with an option for 15 more, the first to be delivered in 1992. Lufthansa is ordering the aircraft in two versions: the A 340-200 with a seating capacity of 220 and a range of 13,000 kilometers and the A 340-300 with a seating capacity of 256 and a range of 11,000 kilometers. The aircraft will be equipped with V2500 SuperFan engines. The communique expressed the hope that this order will motivate other European airlines to purchase the A-340. (Paris AIR & COSMOS 24 Jan 87)* Sharon W. X2519

Ariane

(ESA) Launches of ESA's Ariane rocket will not resume until May of this year. Plans call for a series of 47 tests (23 have been conducted to date) of the modified HM7B third-stage engine at simulated altitudes. The Societe Europeenne de Propulsion is installing a second altitude simulation test bench in February to accelerate the process. Despite the delay, Arianespace hopes to make six launches in 1987. (Paris AIR & COSMOS 17 Jan 87)* Sharon W. X2519

Computers

(Hungary) The first Hungarian version of the Apple mouse was developed recently as an accessory of the Pharos intelligent graphics terminal. The mouse is a hemisphere measuring 110 millimeters in diameter and has a built-in microprocessor. (Budapest COMPUTERWORLD/SZAMITASTECHNIKA 14 Jan 87)* Sari P. X2907

(Hungary) The Computer Technology and Automation Research Institute of the Hungarian Academy of Sciences is developing a UNIX operating system under the name HUNIX. HUNIX can be used on multiprocessor supermicrocomputers based on a VME bus. In a related development, an interactive system called DEMOS (Unified Mobile Operational Dialogue System) is being used with SZM 4 computers. DEMOS is also being adapted for use with MSZR's equipped with 16- and 32-bit microprocessors. (Budapest COMPUTERWORLD/SZAMITASTECHNIKA 14 Jan 87) Sari P. X2907

(Hungary) Tibor Vamos, honorary chairman of the Janos Neumann Society, stated recently that Hungarian computer production and software design have fallen off dramatically. As evidence, he pointed to the import of PCs from Taiwan, limited sales of Hungarian software, and slack marketing efforts. Other society members noted that a near halt to domestic computer development has severely damaged Hungary's ability to compete on the international market. (Budapest COMPUTERWORLD/SZAMITASTECHNIKA 14 Jan 87)* Sari P. X2907

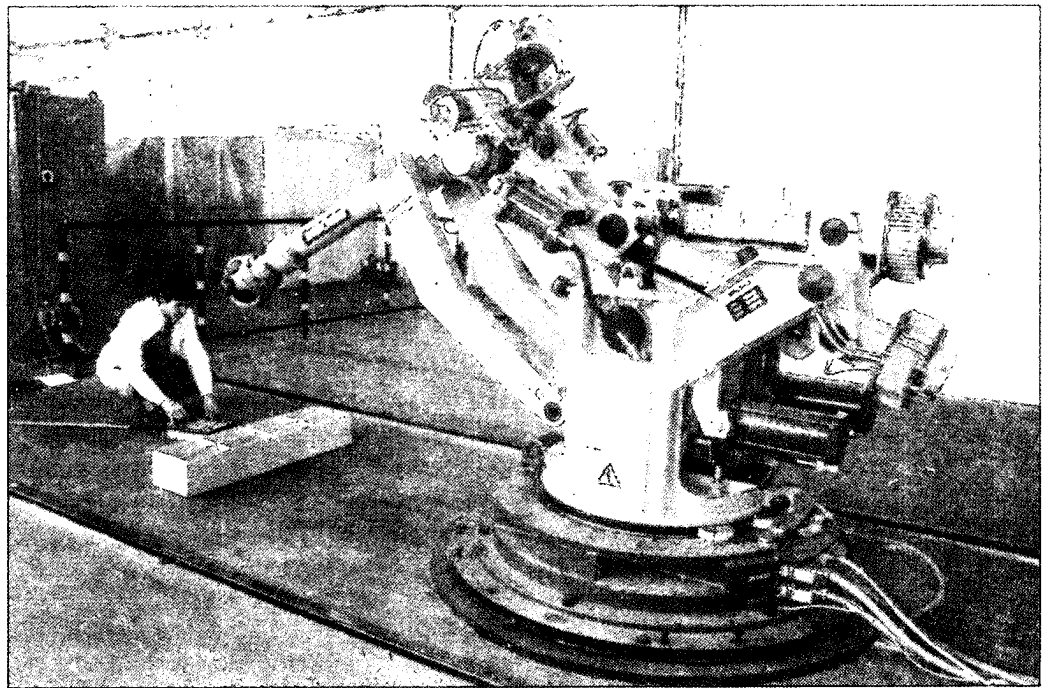
FOR OFFICIAL USE ONLY

Eureka

(West-East Europe) According to a statement by Ingvar Carlsson (presiding minister at the fourth EUREKA ministerial conference held in Stockholm in December), Eureka membership will be limited to West European countries for the present, despite East European interest in joining the consortium. He added, however, that Eureka would not object to East European participation in individual projects. (Frankfurt/Main FRANKFURTER RUNDSCHAU 18 Dec 86)* Sharon W. X2519

Factory Automation

(Hungary) United Incandescent's Kaposvar Electronics Factory this year will produce 220 intelligent control units with memories capable of storing 13 operations that include welding, assembling, and painting. Developed as part of CEMA's factory automation effort, the units will be installed in the Soviet robot (not further identified) shown below. (Budapest NEPSZAVA 21 Jan 87) Sari P. X2907



Microelectronics

(France) Thomson-CSF's Central Research Laboratory (LCR) has announced its manufacture of the "world's first" field-effect transistor (FET) on an alloy of gallium indium arsenide and indium phosphide. Labeled a GaInAs/InP JFET, the prototype chip has 0.5 micron indium phosphide gates, operates at a frequency of 18 GHz, and exhibits a gain of 10 dB, equaling the best performance observed using GaAs. Thomson plans to boost the transistor's frequency to the 94 GHz range. The new FET initially will be used in military radars and missile guidance systems, with civilian spinoffs to follow. (Paris LIBERATION 23 Jan 87; AGRA Database 22 Jan 87) Antwerp Unit/Sharon W. X2519

FOR OFFICIAL USE ONLY

New Materials

(USSR) Specialists at VNIIV Proyekt and the Kurskoye "Khimvolokno" have developed two new grades of a hollow fiber called "Graviton," which is made from "Templen" (a Soviet trade name for a poly-4-methylpentene-1 (PMP alloy) and PMP alloys RT-18 and DX-810 produced by Japan's Mitsui Petrochemical Industries. The tubular polymers will be used primarily as membranes in gas-separation and gas-regeneration equipment. They will also serve as transport capillaries to dispense medicine, as a heat and sound insulating material, and as a means of raising the oxygen level of internal combustion engines. (Moscow KHIMICHESKIYE VOLOKNA Nov-Dec 86) Kris P. X2898

(Japan) The Advanced Nuclear Equipment Research Institute (ANERI) has signed a contract with Mitsubishi Heavy Industries, Nippon Kokan, and Nippon Steel to develop fiber-reinforced metals (FRM) for use in coolant pump mechanical seals and low pressure turbine blades. Mitsubishi will develop short-fiber reinforced metals, while Nippon Kokan and Nippon Steel will work in long-fiber metals. ANERI's materials research also includes a 9-year, 12.9 billion yen program in crystallization-dispersed and dispersion-reinforced alloys and new titanium alloys. (Tokyo KAGAKU KOGYU NIPPO Nov 86) Junko A. X2726

Satellite Testing

(West Europe) The Large Space Simulator (LSS) went into operation on 14 January at the European Space Technology Center (ESTEC) in Noordwijk, the Netherlands. Built to test large satellites, the LSS has a solar simulator (designed by the FRG firm Carl Zeiss) that produces temperatures between -196°C and +100°C in a 2,150 cubic meter test chamber at less than one-millionth the Earth's atmospheric pressure at sea level. The simulator's heat is generated by 19 modules equipped with 20-kilowatt xenon lamps whose light, after reflection off a 7-meter-diameter mirror, is focused on a satellite with a strength of about 1,400 watts per square meter. (Paris LE MONDE 21 Jan 87; Duesseldorf VDI NACHRICHTEN 30 Jan 87) Milan Unit/Eva L. X2519

FOR OFFICIAL USE ONLY**WEST EUROPE: PROTEIN ENGINEERING**

Key Points: Several West European countries have launched extensive protein engineering efforts aimed at the commercial manufacture of bioengineered products for the chemical, pharmaceutical, and agricultural industries. Researchers are relying on advanced graphic modeling techniques in the analysis of protein structures and in the development of new protein-derived substances, according to a December report in the Paris journal BIOFUTUR.

The countries involved in protein engineering seek to manufacture new, "customized" proteins or to structurally reorganize naturally occurring proteins. A potentially profitable market for bioengineered protein derivatives has spurred several West European countries, notably the UK and the FRG, to establish national research and development programs that emphasize computer-aided protein design.

The UK Program

The UK program, which has received substantial funding (Fr35 million between 1985-89), focuses on protein structure identification. About a third of UK funding is dedicated to the development of procedures that will identify a protein's tertiary structure (the characteristic three-dimensional folding of a protein molecule's polypeptide chains) and to the design of algorithms and advanced data processing techniques for graphic modeling of protein molecules. Scientists hope that these techniques will lead to a reliable method for using a protein's amino acid sequence to control and predict its three-dimensional structure. A breakthrough in this area would facilitate commercial production of bioengineered substances.

Coordinated by the government's National Science and Engineering Research Council (SERC), the UK bioengineering effort is a close collaboration between the industrial firms Celltech Ltd.-Apcel Ltd., Glaxo Group Research Ltd., Imperial Chemical Industries plc, and R.T.Z. Chemicals Ltd.-John & Sturge Ltd. and 11 university laboratories. (See chart below for a list of research projects.) As a first step in

The SERC Protein Engineering Program of the UK

Research	Lab	No. Scientists	Funds in pounds
Methodological Research			
Structure prediction (establishment of a database, graphic modeling)	Leeds	5	600,000
Crystallization	Imperial	2	100,000
Computer processing of 2-dimensional nuclear magnetic resonance data	Oxford	1	100,000
Study of Protein Models			
Phosphoglycerate kinase (modification of thermostability)	Bristol	2	100,000
Subtilisin	Imperial	2	100,000
Anti-lysozyme antibodies	Oxford	1	50,000
Dihydrofolate reductase (modification of catalytic activity)	Leicester/UMIST (University of Manchester Institute of Science and Technology)	2	100,000
Inhibitor of Barley's protease	Imperial	1	50,000
Study of Particular Proteins			
Penicillin acylase	York/Newcastle	5	350,000
Glucose isomerase	Imperial	2	450,000
Methanol oxidase	Leeds	1	50,000

FOR OFFICIAL USE ONLY

providing a legal framework for this new industry, the British Government has established patent and licensing guidelines to facilitate eventual commercial production.

The FRG Program

FRG protein engineering has focused on identifying the relationship between a protein's structure and function as a means of developing new substances and functions. The three-year "Protein Design" project, coordinated by the GBF (Company for Biotechnology Research), is working on computer-aided protein modeling and structural analysis, biocatalysis for industrial applications, and analysis and modification of the active sites of growth factors. The GBF recently acquired "hardware" (not further identified) that will be used to improve computer-aided protein analysis and modeling.

Research on DNA synthesis and gene cloning is being conducted at the European Molecular Biology Laboratory in Heidelberg, the Institute for Fermentation and Biotechnology in Berlin, and the Institute for Biotechnology of the Nuclear Research Center in Julich. As in the UK, close cooperation between the government, research institutes, and industry indicates that the FRG plans to rapidly transfer research results to industry.

Nordic Efforts

University laboratories in Sweden (at Lund, Umea, Uppsala, and Stockholm) and Denmark (at Aarhus and Copenhagen, and at the Carlsberg Institute) have started protein engineering research projects involving what is reported to be "large and very costly hardware" (not further identified). The work emphasizes R&D in protein synthesis and structure through study of the protein elongation factor EF-Tu, the hydrolyzing enzyme carboxypeptidase A, and the catalyzing enzyme ribonuclease reductase. In addition, the Internordic Protein Engineering Project was established last year as a focal point for government, university, and industry R&D. The project is managed by Nordforsk, which is composed of Council for Research and Academy of Sciences representatives from Sweden, Norway, Finland, Denmark, and Iceland. (See table below.)

Summary of West European Protein Engineering Programs

Country	Program	Budget	Start Date	Duration	Partners
UK	SERC	Fr35 million	May 1985	4 years	SERC, industry, universities
FRG	GBF	Fr16 million	Oct 1985	3 years	GBF, universities, industry
Nordic area	Internordic Protein Engineering Project	Fr4 million	1986	not decided	NORDFORSK, industry, universities
EC	Pluriannual Biotechnology Research Program	Fr350,000 (per year per lab)	March 1985	5 years	Universities, industry

EC Funding

The EC is funding protein engineering through its Pluriannual Biotechnology Research Action Program (1985-1989), which is geared to the development of marketable technologies. Research laboratories in France, the Netherlands, Denmark, Belgium, and the UK are receiving Fr350,000 a year to study bioinformatics (the application of expert systems and computer-aided modeling techniques to bioengineering), new methods of enzyme catalysis, and artificial enzymes.

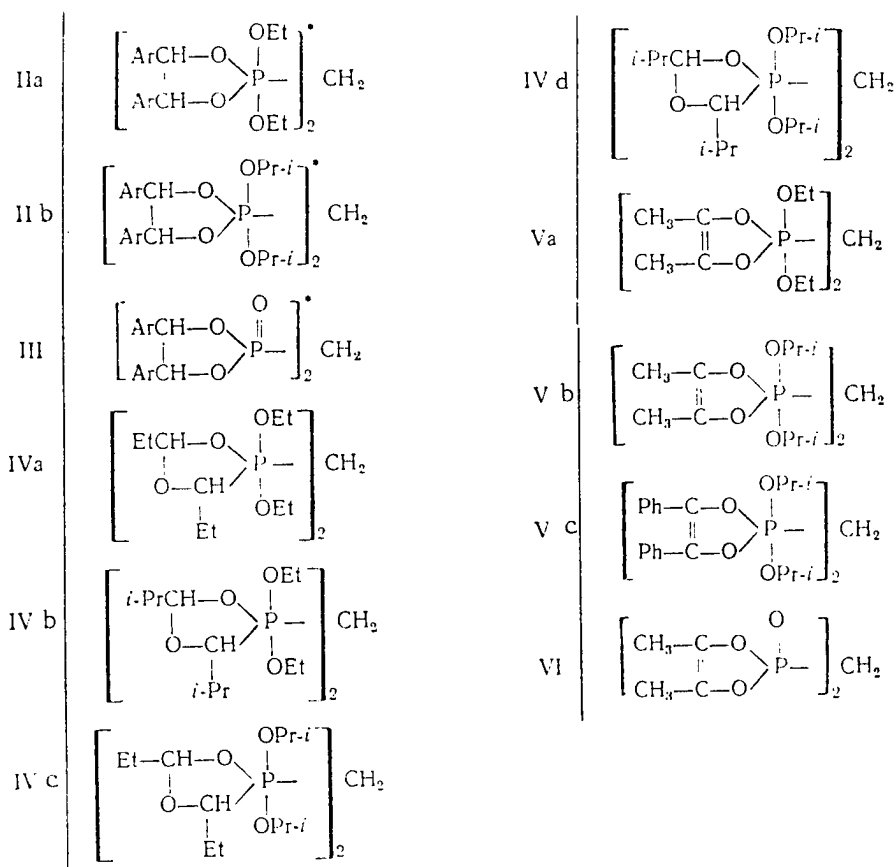
Eva L. X2519

FOR OFFICIAL USE ONLY

USSR: NEW ORGANOPHOSPHORUS PESTICIDES

Key Points: Chemists at Moscow State University (MGU) have synthesized seven new phospholanes and four new phospholenes and studied their effectiveness as pesticides on a variety of plants. Most of the compounds act as moderate fungicides while a few exhibit insecticidal, herbicidal, or growth-regulating properties. Positive results have encouraged the Soviets to create more organophosphorus compounds of this type in an effort to obtain pesticides with increased toxicity, according to VESTNIK MOSKOVSKOGO UNIVERSITETA: SERIYA 2: KHIMIYA (Sep-Oct 86).

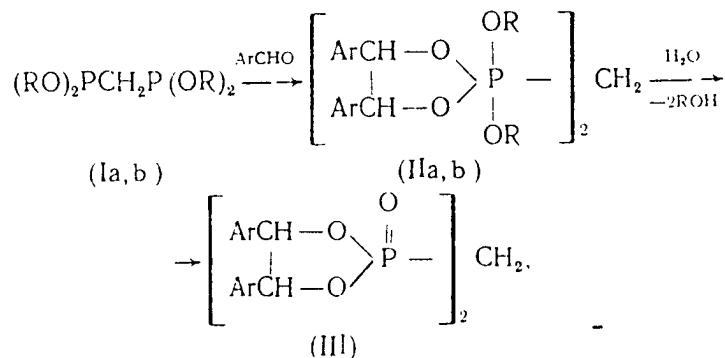
MGU scientists have developed a new method for synthesizing a number of methylenebis(dioxaphospholanes) and methylenebis(dioxaphospholenes). These compounds, which are the focus of pesticide research being conducted by Z.S. Novikova and others at the Department of Organic Chemistry at MGU, contain two penta- or tetracoordinated phosphorus atoms separated by a methylene group (shown in the table below). Tetraalkyl ethers of methylenebisphosphonous acid serve as key compounds in the synthesis.



* Ar = $\text{p-NO}_2\text{C}_6\text{H}_4$.

FOR OFFICIAL USE ONLY

The following reaction of tetraalkylmethylenebisphosphonites (I a, b) with p-nitrobenzaldehyde is representative of this type of synthesis:



R = Et (Ia; IIa), i-Pr (Ib; IIb); Ar = p-NO₂C₆H₄.

During hydrolysis of the phospholanes (II a, b) at mild conditions, methylenebis(2-oxo-4,5-p-nitrophenyl-1,3,2-dioxaphospholane) (III), containing a tetracoordinated phosphorus atom, is produced. Using this method, the MGU chemists synthesized three types of methylenebisdioxaphospholanes (II, III, IV) and the corresponding methylenebisdioxaphospholenes (V, VI).

Research on the pesticidal activity of these compounds was conducted at VNII of Chemical Agents for the Protection of Plants. Most of the 11 phospholanes and phospholenes (compounds IV a, b, d, VI in vitro and compounds II, IV, V in vivo) acted as moderate fungicides. In tests conducted on cell cultures from higher plants, compounds II b, IV a, d, and V b acted as growth regulators. Although compounds II-VI were tested on three plants and sprayed on standard insect samples, no conclusive results were given in the article concerning their herbicidal or insecticidal activity.

Based on their positive results, MGU chemists will continue to synthesize new phospholanes and phospholenes in an effort to obtain "new substances with practically useful properties."

Kris P. X2898

FOR OFFICIAL USE ONLY

CUBA: BIOTECHNOLOGY RESEARCH

Key Points: As part of Cuba's Center for Genetic Engineering and Biotechnology (CIGB), the Biological Research Center (CIB) has developed cloning techniques for the production of interferon and monoclonal antibodies. The CIGB reportedly is conducting "high-risk" genetic research, according to the Paris trade journal BIOFUTUR (Dec 86).

Established in 1986, the Cuban Center for Genetic Engineering and Biotechnology spearheads Havana's effort to apply advances in biotechnology to the country's health care and agricultural sectors. Cloning techniques developed at the CIB form the springboard of Cuban bioengineering research. (For previous reporting on Cuban biotechnology research, see SCIENCE AND TECHNOLOGY PERSPECTIVES Vol. 1 No. 10, p 10.)

Research

CIB scientists trained in gene cloning at the Cantell Laboratory in Helsinki have isolated alpha interferon (a leukocytic interferon) from white blood corpuscles and obtained "relatively large" amounts of alpha 2 interferon (or immune interferon, capable of affecting antibody production and cell-mediated immunity) by cloning the protein in yeast cells. Interferon is a class of soluble proteins produced by cells invaded by a virus or certain bacteria. These proteins induce in noninfected cells the formation of an antiviral protein that inhibits viral multiplication. CIB researchers have also cloned the gene for the growth factor interleukin-2.

The CIB is expanding its research into the production of monoclonal antibodies. As part of a study on genetic predisposition to arteriosclerosis, researchers identified the monoclonal antibody which acts against the alipoprotein-B receptor. Alipoprotein is the protein component of lipoproteins, which transport cholesterol, triglycerides, and phospholipids in the blood.

Using coliform bacteria as the host, CIB scientists have cloned the genes of the antigen to Clostridium haemolyticum, a bacillus isolated from the blood and tissue of cattle infected with bacillary hemoglobinuria. Other research involves the isolation of a gene resistant to the parasitic sugar cane fungus Helminthosporium sacchari.

Other R&D areas include genetically engineered proteins and peptides, DNA probes, and the development of new vaccines (not further described).

Staff and Facilities

The CIGB employs about 180 researchers, 100 technicians, and 80 maintenance personnel and has among its numerous research facilities a laboratory built in accordance with P4 standards—designating the highest level of containment security to prevent accidental release of harmful organisms. The laboratory is intended for what BIOFUTUR calls "high-risk" genetic manipulation (not further described).

Eva L. X2519

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY**REPORTS**

REPORTS surveys science and technology trends as detailed in articles, books, and journals. It also includes summaries and listings of articles and books which may serve as potential sources for future research. Conference proceedings will occasionally be presented in this section.

USSR: ANTARCTIC ICE MEASUREMENTS

Using radar sounding and continuous profiles of ice thickness, Soviet scientists have gathered new data on Antarctica's interior regions. A portion of this data has been analyzed for inclusion in a new edition of the Soviet ATLAS OF THE ANTARCTIC. The atlas will feature an under-ice relief map and a map of Antarctic ice thickness that present new data on the average depth of ice and rock surfaces and on the volume and thickness of the ice.

The Soviet journal DOKLADY AKADEMII NAUK SSR (Vol. 291, No. 1) contains a paper by I.A. Suyetova that provides tables of these recent Antarctic measurements. By comparing the current data to that presented in the 1966 edition of the atlas, Suyetova concludes that the volume of Antarctic ice has increased by 1.5 cubic kilometers. The article also provides more precise methods of calculating areas of ice and rock, the amount of ice above sea level, and the amount of rock below sea level.

A second paper by Suyetova, in collaboration with A.M. Berlyant and B.B. Serapinas, from the January 1987 VESTNIK MOSKOVSKOGO UNIVERSITETA (SERIYA 5: GEOGRAFIYA), argues that the latest Soviet measurements are more reliable because they are based on construction and analysis of hypsographic curves of the ice and under-ice (rock) surfaces and a hexagonal plotted curve of the data from a map of ice thickness. The paper describes the two methods, presents sample graphs of the results, and provides tables giving measurements and averages derived from the two curve plots.

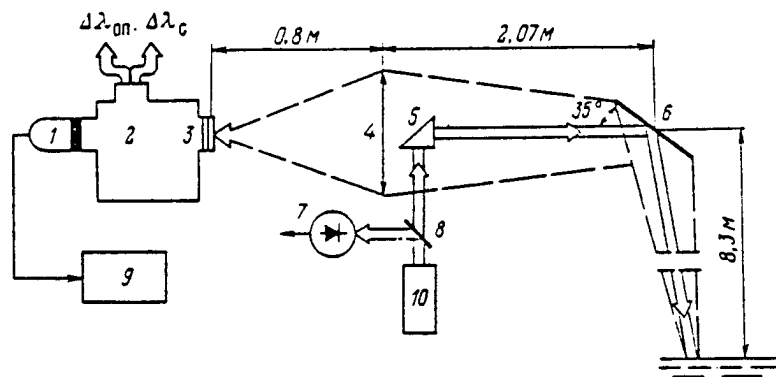
A translation or abstract of the Suyetova papers will appear in USSR REPORT: EARTH SCIENCES.

Beverly C. X2723

FOR OFFICIAL USE ONLY**USSR: ARTICLES ON OCEAN REMOTE SENSING**

Recent articles in the Soviet journal OKEANOLOGIYA indicate that Soviet scientists are continuing to focus on the application of remote sensing methods in oceanographic research. (For a discussion of previous Soviet scientific literature on this topic, see SCIENCE AND TECHNOLOGY PERSPECTIVES Vol. 1. No. 4, pp 8-9.) The following citations present a brief discussion of the most current OKEANOLOGIYA articles.

1. "Remote Measurement of Chlorophyll Concentration by the Laser Fluorometer Method" (May-Jun 86). This article describes shipboard observations of the space-time distribution of chlorophyll "a" and dissolved organic matter in various areas of the Mediterranean Sea and provides a diagram of the experimental unit (reproduced below) cited in the article.



- 1) Photomultiplier
- 2) MDR-4 Monochromator
- 3) Unidentified
- 4) Objective
- 5) Rotary Prism
- 6) Metal Mirror
- 7) Photodiode
- 8) Unidentified
- 9) Digital Voltmeter
- 10) Unidentified

2. "A Laser System for Measuring Waves on the Sea Surface" (May-Jun 86). This article describes a shipboard optical device for observing the distribution of sea surface angles of inclination by measuring reflected light impulses.

FOR OFFICIAL USE ONLY

3. "Vertical Heterogeneity and Possibilities for Remote Sensing of the Chlorophyll Distribution in the Baltic Sea" (Jul-Aug 86). This article presents evidence that complex vertical chlorophyll stratification severely hampers the application of non-contact methods to evaluating potential primary production of chlorophyll in the water column and to evaluating the concentration of the chlorophyll's photic layer.

4. "Measurement of Chlorophyll 'a' Concentration In Vivo and In Situ by Pulsed Sensing Fluorometer" (Nov-Dec 86). This article reports observations on 20 forms of algae conducted by Romanian and Crimean laboratories and by the research vessel "M. Lomonosov" in the Black Sea in September 1984.

5. "Brilliance and Contrast During Remote Sensing by a Narrow Light Beam of an Ocean Layer of Nonuniform Depth" (Nov-Dec 86). This article gives examples of contrast calculations for underwater objects located at various depths.

Translations or abstracts of the above articles have appeared or will appear in USSR REPORT: EARTH SCIENCES.

Beverly C. X2723

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY**DATA BASE SURVEYS**

DATA SURVEY presents an annotated list of documents compiled by FBIS Antwerp and Milan S&T Units from searches of European commercial databases on specific technical topics suggested by consumer requirements. Additional searches and full-text translations of the records cited below can be provided on request.

The following list is the result of Antwerp Unit searches of the Commission of the European Communities' SDC1 data base for citations on the ESPRIT, Alvey, RACE, and COST programs. SDC1 provides references to publicly funded R&D projects undertaken in Europe by institutions active in information technology.

PROGRAM & TECHNOLOGY	DESCRIPTIVE
ESPRIT OSI Standards	Within the framework of Esprit's ELAN (European Local Area Network) project, the European Standards Committee (CEN), the (CENELEC), and the Standards Promotion Application Group (SPAG) are evaluating ways to implement OSI (Open Systems Interconnection) standards among four of Europe's largest computer and telecommunications firms.
Factory Automation	Managed by Italy's Elettronica San Giorgio (ELSAG), the "Depth and Motion Analysis" project is designed to resolve mathematical and theoretical problems inherent in depth and motion analysis. A prototype VLSI vision system will be built to guide robotic devices during obstacle avoidance and arm manipulation tests.
Microelectronics	France's Electronics and Applied Physics Laboratory in Limeil-Brevannes heads the "Basic Technological Studies for GaInAs Misfet's" project to examine the epitaxial growth of gallium indium arsenide on semi-insulating indium phosphide substrates as a means of fabricating insulated-gate field-effect transistors.
Optoelectronics	Italy's CSELT (Telecommunications Study Center and Laboratories) in Turin is managing the "InP Based Optoelectronic Circuits" project to develop an integrated optic source that uses electro-optic effect and current injection to tune distributed feedback (DFB) grating lasers.
Multiprocessing	The UK's Royal Signal and Radar Establishment is conducting the "Development and Application of Low Cost High Performance Multiprocessor Machines" project to develop a prototype high performance flexible multiprocessor computer with a speed of 500 million floating point operations per second (to be achieved by the parallel operation of specially developed VLSI floating point processors).

FOR OFFICIAL USE ONLY

**ALVEY
VLSI**

British Aerospace and STC Semiconductors have been working on an advanced 1.25 micron CMOS process that uses double level metallization and silicidation, and selectively doped polysilicon. This program, called "1.25 Micron Whole CMOS Process," was begun in July 1984 and is scheduled to run for 30 months.

Computer Architecture

The Imperial College (UK) is in charge of the "PARLOG on Parallel Architectures" project to develop the concurrent logic programming language PARLOG on the highly parallel computer architecture of the Alvey Flagship project. Begun on 1 March 1986, the project is slated to run for 36 months.

RACE

Optoelectronics

The London firm STC is heading the "Monolithic Integration of Optoelectronic Functions for Coherent Communication Systems" project to develop a strategy for the evolutionary development of InP-based integrated optoelectronic components. The focus will be on DFB lasers, laser amplifiers, and waveguide components.

Artificial Intelligence

Philips Research Laboratories (UK) is heading the "Connection of Mobile and Portable Services to the IBC Network" AI project to connect mobile subsystems to an integrated broadband communication network.

COST

Computer Security

Within the framework of the "Security Mechanisms for Computer Networks" project, Centraal Beheer (Netherlands) is conducting research in cryptography, access control, and management techniques for the protection of data bases and file transfers.

Satellite

Communications

The European Center for Nuclear Research (Geneva) is conducting the "Satine-2 Satellite Links to Interconnect Local Area Network" project to interconnect various local area networks by a satellite channel carrying computer, voice, and audio traffic at a rate of one megabit per second.

Luxembourg SDC1 Data Base (Feb 87). Antwerp Unit/Sharon W. X2519

FOR OFFICIAL USE ONLY

PREVIEWS

PREVIEWS is an annotated list of selected science and technology items being translated by FBIS. The list may also contain previously published items of wide consumer interest.

EUROPE/LATIN AMERICA REPORT: SCIENCE AND TECHNOLOGY

DFVLR STUDY URGES ROBOTICS USE IN SPACE PROGRAMS

The DFVLR (FRG Research and Development Institute for Air and Space Travel) has released a study entitled "Automation and Robotics in Future German Aerospace Programs." Article summarizes the study and gives a detailed description of the "Rotex" robotics project for the Columbus spacecraft. (Duesseldorf VDI NACHRICHTEN 23 Jan 87)

DFVLR MANAGER VIEWS JOINT PROJECTS WITH US, USSR

Interview with DFVLR official Horst Schreiber discussing FRG participation in Soviet and US space missions and future DFVLR space experiments and goals. (Duesseldorf VDI NACHRICHTEN MAGAZIN No 1 Jan 87)

FRG AIRBUS COMPANY ESTABLISHED TO SEEK BANK LOANS

The FRG has established Airbus GmbH, whose task is to gather funds for FRG participation in the Airbus program. Article outlines the new firm's activities, highlighting the DM2.7 billion in bank loans it has already acquired for Airbus. (Bonn TECHNOLOGIE-NACHRICHTEN MANAGEMENT-INFORMATIONEN 20 Dec 86)

EC FRAMEWORK FOR REGULATION OF BIOTECH PREPARED

By the summer of 1987 the EC Commission intends to introduce proposals for the regulation of biotechnology. The background and goals of EC supervision of genetic engineering are outlined in this EC publication. (Brussels COMMUNICATION FROM THE COMMISSION TO THE COUNCIL 4 Nov 86)

FRANCE'S CHARME PROJECT DEVELOPING PROPFAN ENGINE

Article discusses the CHARME program, which is designed to analyze the aerodynamics of advanced propfan engines. The project may soon enter a second phase aimed at studying high-speed propellers arranged in two sets of counter-rotating blades. (Paris LA RECHERCHE Jan 87)

FRENCH MINISTER ON INDUSTRIAL GOALS, COMPETITION

Jacques Maisonrouge is interviewed on his strategic goals for French industry. The structure of his General Directorate for Industry and its new orientation are explored. (Paris L'USINE NOUVELLE 15 Jan 87)

MORE AUTOMATION, PRODUCTIVITY SOUGHT BY NEW RENAULT CHIEF

Article examines the plans of Raymond Levy, new CEO of France's Renault, to boost productivity and profits through simpler vehicle design and more plant automation. (Paris L'USINE NOUVELLE 18-25 Dec 86)

ARGENTINE HIGH-TECH PROTECTIONISM

Articles detail bills before Chamber of Deputies to protect Argentine science and technology firms from foreign competitors and summarize government protectionism toward the computer industry. (Buenos Aires INFORME INDUSTRIAL Oct-Nov 86)

FOR OFFICIAL USE ONLY

WEST EUROPE REPORT

FRENCH MILITARY BIOTECH STRATEGY, R&D EXAMINED

Article, which focuses on the French Military Research Agency (DRET), discusses the impact of biotechnology on France's military planning and on its defense industry. (Paris BIOFUTUR Jan 87)